

REMARKS

Reconsideration and allowance of the present application based on the foregoing amendments and the following remarks are respectfully requested.

Claims 9-20 are currently pending in the present application. Claims 1-8 and 21-36 have been canceled. Claims 32-39 are newly added.

Drawings Objection

The Examiner's objection to the drawings has been noted, and a new Figure 10 is being filed with this Amendment. Figure 10 is currently informal, and will be formalized upon issuance of a Notice of Allowance. Figure 10 schematically shows the connection between the control assembly, the motor, and the switches. Also, corresponding description has been added to the specification. No new matter has been added.

Claim Rejections

Because claims 1-8 and 21-36 have been canceled, the rejections against them are moot and are not being addressed in this Amendment. The only outstanding rejections are those against the remaining claims, and these will be addressed in turn.

Independent claim 9 stands rejected as being obvious over Zipp in view of Flynn et al. or Reyes. As the Applicants understand it, the Examiner is relying on Zipp for teaching almost all the limitations of claim 9, and further relies on either Reyes or Flynn et al. for teaching the use of switches. The Applicants respectfully request the Examiner to reconsider this rejection based on the amendments made above to claim 9 and on the following remarks.

Claim 9 relates to a brake actuator, and specifically to one driven by a reversible motor that uses two switches and a control assembly to control operation of the motor. Specifically, the construction of claim 9 includes a sensing device having a first attachment structure, a second attachment structure, a biasing structure and a sensor with a first switch and a second switch. The first attachment structure is operatively connected to

IN THE DRAWING(S):

The attached sheet(s) of drawing(s) includes a new Figure 10.

Attachment: Replacement Sheet.

the brake cable and the second attachment structure is operatively connected to the activation member (which is actuated by the motor). These attachment structures are mounted for relative linear movement, and the biasing structure is positioned between them.

The biasing structure enables force to be transferred from the activation member to the brake cable with the biasing structure resiliently deflecting to allow relative linear displacement between the first and second attachment structures. When the attachment structures are displaced by a predetermined maximum amount, an actuating member on one of the attachment structures actuates the first switch; and when the attachment structures are displaced by a predetermined second amount, the actuating member actuates the second switch. Because a biasing structure is used, the amount of displacement will be related to the amount of force applied to the brake cable. Claim 9 has been amended to define that the predetermined maximum amount of displacement (i.e., when the first switch is actuated) corresponds to an amount of force sufficient to fully apply the vehicle brake mechanism; and to define that the predetermined minimum displacement (i.e., when the second switch is actuated) corresponds to an amount of force sufficient to fully release the vehicle brake mechanism.

As a result, the construction provides for actuation of the first switch when the brake mechanism is fully applied, and for actuation of the second switch when the brake mechanism is fully released.

A control assembly is provided, and ceases rotation of the motor when either of these switches are actuated. Thus, the control assembly will cease the motor when the brake mechanism is either fully applied or fully released.

The primary reference relied upon by the Examiner, Zipp, entirely lacks any disclosure of the switches recited in claim 9. Instead, the Examiner relies on either Flynn et al. or Reyes for teaching such switches.

As an initial matter, the Examiner stated in the Official Action that Zipp "alludes to the fact" that switches are used at the top of column 3. The Applicants respectfully submit that this is a misunderstanding on the Examiner's part. At the top of column 3, Zipp at best can be understood as saying that limit switches may be known for detecting position. However, in the invention of claim 9, the amount of force applied to the cable is being detected by the switches. The position of the cable is as important as the force applied, which can be used to ensure that a sufficient high force is used to actuate the brake

mechanism and that sufficiently low force is used to release the brake mechanism. Measuring position can be misleading, as cable slack that develops over time can change cable position. However, when force is being measured, it is ensured that sufficient forces are used for applying and releasing the brake mechanism. Moreover, Zipp actually is teaching away from the use of limit switches, as it states that the use of a displacement sensor makes the use of such switches unnecessary. For this reason, the Applicants submit that this passage from Zipp cannot be appropriately relied upon as teaching the use of switches for force measuring as recited in claim 9.

Reyes teaches a switch 50 that is actuated by being opened when the brake cable is tensioned to a certain amount, which causes sufficient displacement of spring 55 to allow pin 202 to disengage from and open switch 50. However, Reyes does not teach any switch that is actuated when the cable tension is being released. Switches 70 and 90 only act as safety switches in the event the cable breaks or some other malfunction occurs, such as failure of switch 50. Specifically, these switches would only be activated by further travel of bar 120 or rod 80 in the direction used to apply tension to the brake cable (which is to the left in Figures 7 and 8). Thus, these switches cannot be relied upon to teach a switch that is actuated during release of tension in the brake cable. As a result, the Examiner cannot take Reyes as teaching the use of claim 9's second switch which is actuated when the displacement between the first and second attachment structures is displaced by a predetermined minimum amount corresponding to a force sufficient to fully release the vehicle's brake mechanism.

Flynn simply has no second switch, and clearly cannot be relied upon to teach the use of the second switch in claim 9.

Thus, the Applicants respectfully submit that the prior art applied by the Examiner fails to teach the specific combination of claim 9 wherein the two switches are used by the control assembly to cease rotation of the motor when the force applied to the cable is an amount sufficient to fully apply the vehicle's brake mechanism and when the force applied to the cable is an amount sufficient to fully release the brake mechanism. For at least this reason, claim 9 is submitted to be patentable over the art of record, and the Examiner is requested to withdraw the outstanding objection to it.

Claims 10-13 depend on claim 9. These dependent claims are submitted to be patentable based on their dependency from claim 9, and for the reason that they recite additional patentable features.

Independent claim 14 recites the same limitations as claim 9 in the context of a vehicle, and has been amended in the same manner. Thus, the remarks made for claim 9 apply equally to claim 14, and claim 14 is also submitted to be patentable. Claims 15-19 depend from claim 14, and are likewise submitted to be patentable both for being dependent on claim 14, and for reciting additional patentable subject matter.

Independent claim 20 recites a method, and contains the same first and second switches discussed above with respect to claim 9. Moreover, claim 20 specifically recites the method in which these switches are used. Thus, claim 20 is also submitted to be patentable over the art of record.

New claims 37-39 are being added to cover a more generic construction wherein the sensor, with its two switches, is connected to a signal responsive device. Such a device may be a signal light indicating to the user that the activation member is fully applied and/or released, or some other device. These new claims are submitted to be patentable.

Conclusion

All objections and rejections having been addressed, the Applicants submit that the present application is in a condition for allowance, and a Notice to that effect is earnestly solicited.

If the Examiner has any questions or suggestions, he is invited to contact the undersigned to facilitate prosecution of this application.

Please charge any fees associated with the submission of this paper to Deposit Account Number 033975. The Commissioner for Patents is also authorized to credit any over payments to the above-referenced Deposit Account.

Respectfully submitted,

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